



# Do they accept compulsory vaccination? Awareness, attitudes and behaviour of hospital health care workers following a new vaccination directive

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## ARTICLE INFO

### Article history:

Received 14 February 2009

Received in revised form 9 March 2009

Accepted 17 March 2009

Available online 7 April 2009

### Keywords:

Health care worker

Vaccination

Hospitals

## ABSTRACT

Achieving high vaccination rates among health care workers (HCW) is an ongoing challenge. In 2007, the state of New South Wales, Australia instituted a policy directive with compulsory provisions for health care workers to be vaccinated. This study sought to identify staff awareness and attitudes in the early phase of implementation. It involved a self-completed paper-based or electronic survey of HCWs in two tertiary-referral teaching hospitals in Sydney, Australia in 2007. A total of 894/1200 completed the paper survey, whilst a further 185 completed it online. Of the 1079 respondents, 60% (646/1079) were aware of the policy directive but only 10% (63/646) described the specific requirements. Seventy-eight per cent supported the policy; 13% neither supported nor opposed it; and 4% opposed it. This survey provides an early, broad indication of the level of understanding and the attitudes of the HCWs towards the new directive.

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## 1. Introduction

Health care workers (HCWs) face an increased risk of exposure to vaccine-preventable diseases and of spreading those diseases to patients [1]. Maintenance of immunity against vaccine-preventable diseases such as influenza, hepatitis B, measles, mumps, rubella and varicella is an essential part of disease prevention and infection control programs and contributes to a safe environment for staff and patients [2,3].

Over the last two decades, health care authorities have developed guidelines and programs to reduce nosocomial spread of infectious diseases and protect staff [4,5]. However, many of the intervention programs to date have had limited success in encouraging and maintaining HCW vaccination levels [6]. Some studies have reported successes, however many of these are based on aggressive hospital vaccine campaigns which have used mobile carts to motivate employees [7–9].

While Australia leads the world in community vaccination coverage especially in influenza uptake, HCWs persistently lag behind. In 2002, a survey of 269 staff in a tertiary level adult's hospital in Melbourne (Australia's second largest capital city); found self-reported coverage varied depending on the vaccine; from 36%

(Hepatitis A) to 95% (Hepatitis B). Most HCWs in the study (76%) had not heard of, or seen vaccination guidelines; and only 39% kept written vaccination records [10]. In New South Wales (Australia's largest capital city), a survey of all public and private hospitals showed widespread hepatitis B vaccination amongst medical staff but low rates of screening and vaccination for measles, mumps, rubella and varicella [11]. A second study which examined HCW immunity to hepatitis B, measles, mumps, rubella (MMR) and varicella, in two healthcare facilities in south-western Sydney (within the state of New South Wales), found that almost two-thirds were immune to hepatitis B. However, in comparison to the last study, immunity to MMR and varicella ranged from 88% to 94% [12].

In early 2007, the New South Wales Department of Health issued a policy directive, *Occupational Assessment, Screening & Vaccination Against Specified Infectious Diseases*, which requires all staff in certain patient care areas to demonstrate protection against certain infectious diseases or be vaccinated against measles, mumps, rubella, diphtheria, tetanus, pertussis, hepatitis B, varicella and to be screened for tuberculosis. Under the 2007 policy directive, employers of HCWs must: (1) vaccinate all consenting HCWs without contraindications who are non-immune and otherwise at risk of acquiring and transmitting infection with vaccine-preventable diseases in the course of their work; and (2) enforce work restrictions for staff that do not have the required evidence of protection against vaccine-preventable diseases. Also under the directive, HCWs must: (1) comply with the directive's policies or (2) acknowledge in writ-

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ing that they will not comply and engage with the employer to determine future work options. HCWs that do not have evidence of protection are not permitted to work with certain client groups and in certain clinical areas. Vaccines encompassed within the directive include measles–mumps–rubella vaccine (MMR), varicella, hepatitis B vaccine, and diphtheria–tetanus–(acellular) pertussis vaccine (dTpa). Influenza vaccine was not included in the 2007 policy directive.

Two hospitals located in Sydney, metropolitan area of NSW, commenced implementation of the policy in early 2007 and provided screening and vaccination free of charge for all staff in the hospital. The aim of this study was to assess the awareness and attitudes towards the policy directive during the initial phase of its implementation.

## 2. Methods

Between June 4 and October 19, 2007, we conducted a survey in two tertiary-referral teaching hospitals (one adult and one paediatric) in Sydney, Australia's largest capital city.

### 2.1. Participants

We contacted the head of 40 different wards and departments by either e-mail or letter to obtain permission to attend appropriate meetings/ward hand-over's to distribute surveys. All staff members who were working in these selected wards at the time of the meeting were given a survey. Participants returned the survey to us immediately or by inter-office mail. In the emergency and intensive care wards, personalised mail outs to all staff members were used. In the paediatric hospital, an identical electronic questionnaire was advertised and placed on the intranet between 12 June 2007 and 24th July 2007. Access to the electronic questionnaire depended on the staff (from all four categories) having access to the hospital computer system.

Four groups were surveyed: Medical (staff specialists, registrars, medical students, etc.), Nursing (registered nurses, nurse unit managers, and enrolled nurses etc), Allied Health Personnel (physiotherapists, occupational therapists, psychologists, etc.) and Ancillary staff (domestic services, administration, computer specialists, etc.). The latter group also included any staff member who was deemed to not have direct patient contact including academic, and public health, staff.

To keep track of the departments that responded and identify those who required follow-up, each ward/department was individually coded with an identification number, known only to the research investigators.

### 2.2. Survey

We developed a 6 page survey that assessed: (1) demographic characteristics, professional designation; (2) awareness and understanding of the policy directive; (3) knowledge of specific vaccine inclusion; and (4) level/reasons for support/opposition. The first two parts of the survey included questions about attitudes to influenza vaccination and pandemic influenza intentions. These results are reported elsewhere (in press, BMC Health Services Research). The questionnaire was pilot tested with five health care workers who were similar in their characteristics to the members of the study population and modified accordingly. Ethical approval was received from both hospitals.

### 2.3. Data analysis

The  $\chi^2$  or Fisher exact test was used to assess the statistical significance of categorical variables. We considered results to be

**Table 1**

Demographic characteristics of participating healthcare workers (HCWs).

Characteristic	No. (%) of HCWs (n = 1079)
Hospital	
General	520 (48.1)
Paediatric	559 (51.8)
Occupational cohort	
Nursing	512 (47.5)
Medical	281 (26.0)
Allied health	165 (15.3)
Ancillary/hospital support <sup>a</sup>	121 (11.2)
Sex	
Female	807 (74.8)
Male	245 (22.7)
Not specified	27 (2.50)
Age group (years)	
18–30	338 (31.3)
31–40	280 (25.9)
41–50	247 (22.9)
51+	186 (17.2)
Not specified	28 (2.6)

<sup>a</sup> The group of "other" is made up of hospital research staff, technologists, pathology and laboratory staff and medical imaging staff.

statistically significant with  $p < 0.05$  via the Fisher's exact test. All analyses were performed using the OpenEpi 2.2 statistical package. The levels of accuracy for knowledge towards the policy were calculated using a ranking system. Respondents who could correctly identify the key points (screening, documentation and vaccination) were ranked the highest. Participants who stated that the directive implied either that (1) vaccination needed to be up-to-date; or (2) screening and documentation were requirements of the directive, were ranked second. The last group stated that they were aware of the policy, but were unable to describe it. Content analysis was performed on all written responses to reasons for supporting/opposing the policy directive. Each statement was coded into a category from a list of themes iteratively developed from the data by two authors (HS and JL).

## 3. Results

A total of 1200 surveys were distributed (paper surveys) and 894 collected in the period of June 4 and October 19, 2007. A further 185 questionnaires were submitted electronically from staff at the paediatric hospital (Nurses: 45; Medical: 17; Allied: 61; and Ancillary: 62), resulting in a total of 1079 completed questionnaires. We received 559 surveys (52%) from the paediatric and 520 (48%) from the adult hospital. In the paediatric hospital, 28% (559/2000) of the staff members completed the survey. In the adult's hospital, 8.6% (520/6000) of the staff members completed the survey. Respondents were categorized into four main groups by occupation: Nursing (47.5%), Medical (26.0%), Allied (15.3%) and Ancillary (11.2%). Participant's occupational and demographic characteristics are summarized in Table 1.

### 3.1. Awareness and understanding

Sixty per cent (646/1079) of participants stated that they were aware of the NSW Health policy directive. Among these, only 13% (84/646) were able to accurately describe the requirements (i.e. screening, documentation and vaccination). 53% (342/646) of staff stated that either (1) vaccination needed to be up-to-date; or (2) screening and documentation were requirements of the directive. A further 18.9% (122/646) of respondents were vaguely aware that it involved vaccination. However, their responses did not mention screening or which vaccines

were involved. Lastly, 15% (98/646) of this group did not comment.

Medical staff (OR 3.9 (95% CI: 2.9–5.2) and HCWs from the adult's hospital (OR 2.72 (95% CI: 2.1–3.5) were both significantly more likely to be unaware of the policy. Only 9.7% (105/1079) of participants were able to identify all four vaccines which are included in the directive, whilst, 44% (474/1079) of HCWs incorrectly stated that the influenza vaccine was also a requirement.

### 3.2. Level of support

After a brief description of the policy directive, respondents were asked whether they supported the measure, 78% (845/1079) of staff supported it, 13.0% (137/1079) neither supported nor opposed it and 3.6% (39/1079) of staff opposed the directive. Only one ancillary staff member stated that they opposed the directive. Fig. 1 shows the different primary responses listed by the participants. Amongst participants who supported the directive, self-protection was listed as the most common reason for their support, followed by the protection of colleagues. Amongst the least common reasons were protecting family/friends, staying healthy and protecting patients. Of the HCWs who stated self-protection or general protection as their primary reasons, 47% stated protecting the patient as their secondary reason for support. Other explanations for supporting the directive included reducing absenteeism and reducing the expense of taking time off work.

For the HCWs who opposed the directive, many commented that they felt the policy directive removed their right of choice. Some respondents stated that they were unhappy about the approach, or they were not given enough information. Lastly, some staff members were concerned about the safety of the vaccines or did not consider the vaccines effective (especially related to influenza vaccination).

## 4. Discussion

This study was undertaken at an early phase of implementation of a policy directive that mandated vaccination in health care workers. In this early phase, general awareness of the policy was incomplete and detailed knowledge was poor. This is likely to have increased as the policy steadily disseminated and was enforced over time. One effect of the lack of detailed knowledge was the impression held by almost half that influenza vaccination was a requirement under the policy, which may be viewed as beneficial if such a policy increases influenza vaccination rates.

The study was restricted to two tertiary-referral hospitals in a similar locality. Since hospitals across NSW were at liberty to devote varying levels of resources to implementation, there would likely be variation in the findings across a larger range of hospitals. A second limitation relates to the online response rate. The online invitation to complete the survey electronically was seen by an unknown number of staff at the paediatric hospital leading to a lack of denominator data about the 185 completing it. Nevertheless, the paper-based survey was comprehensive, yielding a large sample and acceptable response rate. It is important to recognize that the generalisability of our results may have been affected by the limitations inherent to any voluntary questionnaire-based cross sectional study. Given the design of the study, we relied on a sample of 1200 staff members from the total number (8000) of hospital staff in both hospitals. As responses were voluntary, there may have been responder bias in the sample. We were unable to compare the demographics of the respondents versus non-respondents. However, of those 1200 targeted for a paper survey, the response rate (75%) was reasonable.

The NSW Health Policy Directive was unique in terms of provisions for mandating immunisation if necessary. Options for staff members who were classified as being unprotected or unscreened included: (1) being transferred to an alternative clinical area; (2) being retained in an appropriate new clinical specialty or a non-clinical area; or (3) being transferred to an administrative or management support role [13]. In the absence of a legal requirement, it is unclear the extent to which health care workers in hospitals in NSW have been moved from their areas due to being unprotected.

The directive had some vocal opponents. Shortly after it was introduced, a NSW-based vaccine opponent consumer group commenced active lobbying of state members of parliament to oppose the policy. They also invited the public to complete an on-line petition which by 31 October 2008 had received 2284 signatures [14]. Despite this, our study found only a small percentage of HCWs surveyed were opposed to the policy with the predominating view that it infringed on their personal choice. Indeed, the vast majority supported the policy, most commonly for self protection with patient protection very much secondary in the respondents' stated reasons.

Self protection and personal health are the most common reasons that HCWs give for why they accept vaccination especially the influenza vaccine [1,15–18]. Beyond the wish to avoid illness, HCWs may accept vaccination in order to decrease the chance that they might miss work because of illness. In one survey of house staff physicians, one-third of respondents said that they got the influenza vaccine to help avoid absenteeism [19]. As protection of

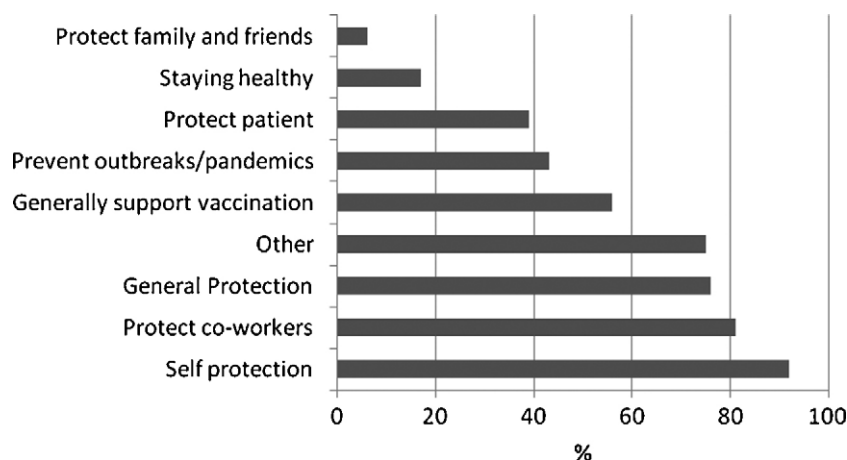


Fig. 1. Primary reason stated by participants for supporting the directive.

vulnerable patients was the primary rationale for such a policy, clearly, there is a need to foster a culture of support for vaccination as patient protection in line with one's duty of care. Educating HCWs about patient protection and appealing to their altruism may be a way of improving voluntary uptake or acceptability of compulsory immunisation.

The principal of beneficence refers to a moral obligation to act for the benefit of others, an obligation that includes preventing harm from occurring to others [20]. When a patient is cared for by a HCW, the latter assumes a beneficence that would not be present apart from the healthcare relationship. Although there may be limits to specific beneficence, many feel that such reasonable and practicable steps as HCWs being vaccinated to avoid significant harm falls within this obligation. People who are ill or medically compromised expect that the system to which they turn for care should take every possible measure to ensure that as few risks are posed to them while they are patients in that system.

One of the central difficulties in the mandatory vaccination debate centres on the concept of "duty of care". "Duty of care" suggests professional responsibility, which in public health has wider connotations than for personal care. However, problems arise when you try and define to what extent are HCWs responsible for potentially vulnerable populations, and to what extent are HCWs justified in valuing personal interests over their patient interests [21]. Critics of mandating vaccination base their opposition on the ethical principles of liberty, autonomy, choice, and self-determination. Many, HCWs have argued that requiring vaccination infringes on their personal freedom. However, it is counter-argued that any infringement on personal freedom, privacy, dignity or loss of income is minimal compared to the benefits of reduced rates of these vaccine-preventable diseases amongst patients. Society generally considers that significant public good greatly outweighs minimal risk to the individual: this justifies some level of coercion. However, society also recognises the right that people have to bodily integrity [22]. When compared to other public health mandates which infringe autonomy such as seatbelts, vaccines impose a greater infringement of liberty as they are invasive. In addition, if those who do not comply with vaccination face dismissal, this infringes a person's freedom to work and ensure financial security [23].

Whether a policy with elements of mandatory vaccination facilitates such protection is yet to be determined locally and more broadly, has been the subject of debate in the medical literature. Our early results in two major Sydney hospitals show much room for improvement. Future evaluative work is important and will aid understanding of the process by which implementation of such a policy is most successful and its ultimate impact on vaccine coverage.

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